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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,827	05/21/2002	Chenghui Luo	Fraunh01.014	8660

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EXAMINER	
DASTOURI, MEHRDAD	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,827	LUO ET AL.	
	Examiner	Art Unit	
	Mehrdad Dastouri	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8,15-18 and 21* is/are rejected.

7)☒ Claim(s) *5, 9-14, 19, 20and 22-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ :
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicants' amendment filed July 26, 2004, has been entered and made of record.

Response to Arguments

2. Applicants' arguments have been fully considered but they are not persuasive. Applicants' arguments are based on comparison of the title of Applicants' patent application with the full title of reference (Collberg et al., Prior art of record). Applicants further argue that the terms "watermark" and "key", and "authentic" which are all important terms in Applicants' disclosure are not found when being searched in prior art of record.

The Examiner disagrees and indicates that the entire teachings of a prior art are the basis for anticipation of a claimed invention or establishment of a *prima facie* of an obviousness type rejection. Title of a patent or publication which are cited as a prior art, usually consists of a limited number of characters in length, and shall not be relied upon for disclosing the content of prior art's teachings.

It is further submitted that consideration of the technical meanings of "watermark", "key", and "authentic" are the basis for examination and interpretation of the claimed subject matter.

Watermarking is defined as modifying a data structure (a bit-stream executable by a computer such as a digital image, a digitized voice, or basically any sequence of bits (binary digits) of "0's" and "1's") by embedding binary data in order to manipulate

the binary digits in the bit-streams of the data structure. As far as the rejected claims are concerned, the claim language simply recites "watermark" and does not recite a specific watermarking procedure (e.g., modifying the coefficients of a Fourier-Transformed signal or data structure by embedding watermark data; modifying least significant bits of the bit-stream by adding or subtracting watermark data; combining watermark data to be embedded with the wavelet coefficients of one of a plurality of sub-bands which are formed in the Discrete Wavelet Transform domain, etc.). The obfuscation methodology taught by Collberg et al., as well, embed data in bit-stream of the data information (i.e., Software) for the purpose of transmitting a genuine software as depicted at least in Figures 5 and 6, consistent with the definition of watermarking.

Authentication means establishment of validity or genuineness of an information material. The obfuscation/de-obfuscation methodology taught by Collberg et al. (Similar to other steganographic or watermarking techniques) will verify the authenticity of the obfuscated information material as clearly indicated in Pages 31-32, Section 11.2, Other Uses of Obfuscation.

Utilization of a "key" in encryption, watermarking, steganography, obfuscation and similar information hiding and confusing techniques are extremely well known. As it is disclosed at least in Section 7.1 (Starting from Page 17, Encoding transformation), any of the different parts of encoding transformation (Which are known to sender and receiver) could be considered a "key".

Claim Objection

3. Claim 3 is objected to for the following informalities:

Claim 3 depends on the canceled Claim 2. It appears that Claim 3 should depend on Claim 1.

Furthermore, it is recommended to change the conditional limitations in Claim 1 (use of "may") to positive limitations (e.g., changing, "the watermark may be obtained", to "to obtain the watermark".).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-4, 6-8, 15-18 and 21 are rejected under 35 U.S.C. 102(a) as being anticipated by Collberg et al (A Taxonomy of Obfuscating Transformations).

Regarding Claim 1, Collberg et al disclose a method of adding a watermark to a sequence of executable instructions (Java Programs) to render the sequence authenticable, the method comprising the steps of:

receiving the sequence of executable instructions and a key (Figures 1 and 5; Page 3, Column 2; Section 7.1 (e.g., c_1 and c_2 in Section 7.1.1));

using the key to modify the sequence of executable instruction so that the watermark may be obtained from the modified sequence, the sequence being modified such that the usefulness of the modified sequence for the sequence's intended purpose is not affected by the modifications made thereto and the watermark representing a

watermark value which may be employed to authenticate the sequence (Figures1, 5 and 6; Abstract; Page 3, Column 2; Pages 4-6, Sections 3 and 4; Architecture of Kava or Java obfuscation tool. Section 7.1. The key shown as an example in encoding transformation in Section 7.1.1 indicates the manner of modifications to be made to the executable sequences, which are detectable, by the receiver. Further, the modifications do not prevent the use of the executable instructions as shown in Figures 22-26.).

Regarding Claim 2, Collberg et al further disclose the method set forth in Claim 1 wherein:

the step of receiving the sequence of executable instructions further includes receiving a watermark value (Figure 5, Object Code); and

the step of modifying the sequence modifies the sequence so that certain of the instructions therein represent a watermark value (Figures 1 and 5, Obfuscated Object Code; Figure 6; Pages 6 and 7, Section 4);

whereby the watermark value may be obtained from the modification location (an inherent characteristic of watermark detection or de-obfuscation.).

Regarding Claim 3, Collberg et al further disclose the method set forth in Claim 1 wherein the step of modifying the sequence includes the steps of:

using the key to determine locations in the key including modification locations at which the sequence is to be modified (Figure 10; Pages 11-14, Section 6.2);

modifying the sequence at the modification locations such that the locations specified by the key represents the watermark value (Figure 10; Pages 11-14, Section 6.2).

Regarding Claim 4, Collberg further disclose the method set forth in Claim 3 wherein the step of modifying the sequence includes the steps of:

inserting one or more executable instructions at each of the modification locations, the inserted instructions having no effect on any output from the execution of the sequence of instructions (Figure 10; Pages 11-14, Section 6.2).

Regarding Claim 6, Collberg further disclose the method set forth in Claim 1 further comprising the step of:

providing the watermark to an authenticating entity that authenticates the watermarked code (Figure 26; Pages 23-26, De-obfuscation; Pages 31-32, Section 11.2).

Regarding Claim 7, Collberg further disclose the method set forth in Claim 1 further comprising the step of:

providing the key to the authenticating entity (Figures 25 and 26; Pages 23-26, De-obfuscation. Providing the key is an inherent part of authentication.).

Regarding Claim 8, Collberg further disclose the method set forth in Claim 1 wherein:

the modified sequence of executable instruction is modified such that when the modified sequence of executable instruction is executed, execution state is produced which has a property that depends on the key (Figures 25 and 26; Section 9, De-obfuscation);

whereby the watermark value is a description of execution state from the modified sequence (Figure 25, "program-within-program").

Regarding Claim 15, Collberg further disclose the method set forth in Claim 8 further comprising the step of:

providing a description of the produced execution state to an authenticating entity that authenticates the watermarked code (Figures 25 and 26; Pages 23-26, De-obfuscation; Pages 31-32, Section 11.2).

With regards to Claims 16 and 17, arguments analogous to those presented for Claim 7 are applicable to Claims 16 and 17.

With regards to Claim 18, arguments analogous to those presented for Claims 1, 6, 15 and 16 are applicable to Claim 18.

With regards to Claim 21, arguments analogous to those presented for Claims 1, 6, 8, 15 and 16 are applicable to Claim 21.

Allowable Subject Matter

6. Claims 5, 9-14, 19, 20 and 22-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri
Primary Examiner
Art Unit 2623
January 18, 2005